

# Module 7: Supervised Learning-1

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## Case Study

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## Case Study

### Objectives:

- Fit a model using binary classification using logistic regression.
- Identify correlated variables and form a less complex model.

### Questions:

1. We will use acoustic features to distinguish a male voice from female. Load the dataset from “voice.csv”, identify the target variable and do a one-hot encoding for the same. Split the dataset in train-test with 20% of the data kept aside for testing.  
[Hint: Refer to LabelEncoder documentation in scikit-learn]
2. Fit a logistic regression model and measure the accuracy on the test set.  
[Hint: Refer to Linear Models section in scikit-learn]
3. Compute the correlation matrix that describes the dependence between all predictors and identify the predictors that are highly correlated. Plot the correlation matrix using seaborn heatmap.  
[Hint: Explore dataframe methods to identify appropriate method]
4. Based on correlation remove those predictors that are correlated and fit a logistic regression model again and compare the accuracy with that of previous model.  
[Hint: Identify correlated variable pairs and remove one among them]